

The opinion in support of the decision being entered today
is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte GUANGQIANG JIANG

Appeal 2007-2210
Application 10/711,154
Technology Center 1700

Decided: September 6, 2007

Before CATHERINE Q. TIMM, JEFFREY T. SMITH, and
LINDA M. GAUDETTE, *Administrative Patent Judges*.

SMITH, *Administrative Patent Judge*.

DECISION ON APPEAL

Statement of the Case

This is an appeal under 35 U.S.C. § 134 from a final rejection of
claims 1-5, 13, and 14. We have jurisdiction under 35 U.S.C. § 6.

Appellant's invention relates to an yttria-stabilized tetragonal
zirconia polycrystalline substrate. Claim 1 is illustrative:

1. A degradation resistant composition of matter for use in living
tissue, comprising:

an yttria-stabilized tetragonal zirconia polycrystal substrate;
a coating of alumina deposited on the substrate, said coating
being deposited by ion beam assisted deposition in the presence
of the substrate; and
wherein said coating has a total porosity of less than about 1.0
percent.

The Examiner relies on the following references in rejecting the
appealed subject matter:

Toibana	US 4,507,224	Mar. 26, 1985
Hida	US 5,192,720	Mar. 9, 1993

Schubert, "Surface Stabilization of Y-TZP," British Ceramic Proceedings
34, 157-60 (1984).

Claims 1-4, 13, and 14 stand rejected under 35 U.S.C. § 103(a) as
unpatentable over Schubert in view of Hida; and claim 5 stands rejected
under 35 USC §103(a) as unpatentable over Schubert in view of Hida and
further in view of Toibana.

We REVERSE.

The Examiner bears the initial burden of presenting a prima facie
case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d
1443, 1444 (Fed. Cir. 1992). In order to establish a prima facie case of
obviousness, the Examiner must show that each and every limitation of the
claim is described or suggested by the prior art or would have been
obvious based on the knowledge of those of ordinary skill in the art. *In re
Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988)).
"[R]ejections on obviousness grounds cannot be sustained by mere
conclusory statements; instead, there must be some articulated reasoning

with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006) (*quoted with approval in KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741, 82 USPQ2d 1385, 1396 (2007)).

The claimed invention is directed to a degradation resistant composition based on tetragonal zirconia polycrystalline ceramic (Y-TZP) material that has been densified by sintering (Specification [Para 16]). The Specification specifies that the Y-TZP material is formed into a desired final shape; subsequently, it is coated with alumina by an ion beam assisted deposition (IBAD) process (Specification [Para 17]). The claimed invention specifies that coating has a total porosity of less than about 1.0 percent.

We initially take exception to the Examiner’s position that the process limitation “ion beam assisted deposition” has no patentable weight, since the claimed invention is recited in a product-by-process format (Answer 3). In the examination of a claim that has been drafted in product-by-process format, the Examiner has the burden under §§ 102/103 to establish that the prior art reasonably appears to disclose a product that is identical with or only slightly different from the product claimed. *See In re Fitzgerald*, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980); *In re Fessmann*, 489 F.2d 742, 744, 180 USPQ 324, 325-26 (CCPA 1974).¹

The Examiner has not met his burden in this case. The specification discloses that the IBAD process creates a conformal coating that is dense

¹ Product-by-process claims are normally rejected under 35 U.S.C. §102 as anticipated by, or in the alternative under 35 U.S.C. §103 as obvious over, the cited prior art.

and strongly adherent to the Y-TZP substrate (Specification [Para 17]). The Specification also discloses that persons of ordinary skill in the art would have recognized that a coating resulting from an IBAD process creates a coating having high bulk density comprising very low open or close porosity and preferably less than 1.0% total porosity (Specification [Para 21]). Thus, in order to establish a prima facie case of unpatentability the Examiner must present evidence that establishes the coating techniques of the cited prior art produces a coating that has total porosity of less than about 1.0 percent as required by independent claims 1 and 13. The Examiner has failed to address the porosity of the coatings of the cited references.

We also agree with the Appellant's description of the Schubert reference (Br. 5). Schubert teaches converting the surface of Y-TZP during densification by sintering in a powder bed of stabilizing oxides. Schubert places the Y-TZP in a powder bed and heats it, thereby allowing an oxide to diffuse into the original surface, thereby converting the original surface of the Y-TZP compact into a stabilized phase as a function of the amount of diffusion. (Schubert 158). It appears that the product produced from Schubert is the starting point for the presently claimed invention.

The Examiner cited the Hida reference for equating alumina to the oxides disclosed in Schubert. Thus, if a person of ordinary skill in the art were to use alumina in place of the oxides described in Schubert, the result would not be the presently claimed invention.

The Toibana reference does not address the differences in the Schubert reference identified above.

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ORDER

The Examiner's decision rejecting claims 1-5, 13, and 14 is reversed.

REVERSED

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